AMENDMENTS TO THE DRAWINGS

Applicants hereby attach Formal Drawings for inclusion in this application.

REMARKS

Applicants amend the priority claim in accordance with the examiner's request. Applicants also submit herewith a set of replacement Figures. In addition, the specification has been amended in accordance with the examiner's suggestion. Applicants cancel claims 2, 6, 11, and 16. Applicants have imported the pose adjustment limitation of claim 8 into claims 1, 13, and 19. Claims 1, 3-5, 7-10, 12-15, and 17-20 are pending.

Claim Objections

The examiner objected to line 1 of claim 1 as containing a grammatical error. Applicants have amended the claim, which now recites "A method of processing an image of a face, the method comprising the steps of…"

The examiner also objected to claims 2 and 11 as failing to further limit the subject matter of a previous claim. Applicants have canceled claims 2 and 11, rendering the objection moot.

Rejections Under 35 U.S.C. § 102

The examiner rejected claim 8 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,995,639 to Kado (Kado). Claim 8 requires "adjusting a pose of the three dimensional facial image." The examiner believes that Kado's brightness correction is the same as pose adjustment. We disagree. Performing brightness correction on an image is different from pose adjustment. The difference is a fundamental one, as we explain below.

Claim 8 requires adjusting a pose of a three dimensional image. Adjustment of pose is a geometrical transformation, which requires performing a rigid rotation on a three dimensional image. The examiner states that performing a brightness correction is the same as adjusting the pose, and he draws our attention to a passage in Kado that describes brightness correction. But pose adjustment is different from brightness correction for at least the following reasons. Pose adjustment involves applying a geometrical transformation to the model, such as a rotation. This rotation determines the appearance of a projection of the three-dimensional image into any particular two-dimensional image plane. For example, pose adjustment causes different portions

8

of the three-dimensional image to appear in any given two-dimensional projection, and it

changes the shape of projected features in the image. Such effects are absent in Kado's

brightness correction process because there is no change in the geometrical relationship between

Kado's fixed three dimensional model and his two dimensional image. In contrast to pose

adjustment, Kado's brightness correction method uses a fixed facial model, i.e., a model that is

fixed in relation to the image plane. The method determines the position of the light source in a

captured image from the brightness of patches of the facial model. It then determines the

brightnesses of the model patches for a light source placed in a standard position with respect to

the face. This process enables Kado to simulate illumination from a light source that is located

in a standard position with respect to the model.

Kado describes his brightness correction method as follows:

> ... The position of the light source is estimated by the extracted
> brightnesses and normal vectors of the patches. For example, if a face image is
> divided into 4 parts with horizontal and vertical lines. By observing the brightness
> distribution over the 4 parts, the direction in which the light source is directed to
> the photographed face can be estimated. If the estimated position of the light
> source is different from the position of the light source at the time of creating the
> personal feature amounts stored in personal database 17, then the brightnesses are
> corrected to adjust them to one of the positions of the light source. That is, the
> brightness of a patch whose normal is closer to the old direction of the light
> source is lowered, and the brightness of a patch whose normal is closer to the new
> direction of the light source is raised. (7: 36-50, emphasis added)

In other words, Kado is concerned with determining the position of light source illuminating a

two-dimensional image, and then correcting the illumination to make it correspond more closely

to a standard illumination, so as to "prevent misjudgment due to a difference in the position of

the light source in photographing." (7:24-26) The illumination is corrected by adjusting the

brightness of patches in the model based on the angle of patch's surface normal. This correction

involves no changes in the surface normals of Kado's face model patches, i.e., no rotation or any

other geometrical adjustment of his three dimensional model is performed. Thus there is nothing

in Kado that even hints at adjustment of pose, as required by the claim.

Independent claim 1, 13, and 19 each contain limitations that are analogous to those of

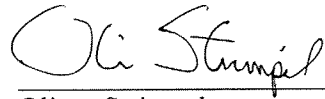claims 1. Therefore, for the reasons discussed above, Applicants believe that claims 1, 13, and

19, and dependent claim 3-5, 7, 9, 10, 12-15, 17, 18, and 20 are not anticipated or rendered obvious by Kado.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Please charge the $525.00 fee for a three-month extension of time, and any other fees that might be due, or credit any overpayments to our Deposit Account No. 08-0219, under Order No. 0291359.00126US2, from which the undersigned is authorized to draw.

Respectfully submitted,

Dated: December 12, 2007

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